Volume 24, Issue 4

TRIBUTARY TRIBUNE

Stories and Art by Members of the Watershed Stewards Program

Year 24, District C

"I wanted the coho in this image to look a bit blurry around the edges, soon to fade back into the land which they likely were spawned themselves." -Justine Brumm

In This Issue

Justine Brumm removing an otolith from a coho carcass.

Spawning the Next Generation

By Justine Brumm
Member placed at Marin Municipal Water District

This year's spawner season on Lagunitas Creek provided me a glimpse into the full-circle nature of the life of salmonids, which I recently realized parallels the cycle of WSP. As the Year 25 applicants interview and compete for a spot at their desired Placement Site, the coho smolts of Year 24 continue to compete for the ocean's resources and prepare to make their way back upstream for their final, and perhaps most dramatic competition.

A program of the California Conservation Corps, WSP is one of the most productive programs for future employment in natural resources. WSP is administered by California Volunteers and sponsored by the Corporation for National and Community Service and the California Department of Fish and Wildlife.

2017 Northern California Fires

By Sofia Morales-Leon
Member placed at San Francisco Regional Water Quality Control Board

Every year during California's fire season, numerous wildfires occur. However, wildfires are usually contained before they expand and cause severe damage. In 2017 alone, there were a total of fifteen major wildfires in California. In Northern California there was the Oak, Wallow, Redwood Valley, Steele, Cove, Tubbs, Nuns, and Atlas fires. Even though the 2017 Thomas Fire in Southern California was the largest fire per acre in the history of California, totaling 281, 893 acres burned, the Tubbs and Nuns fires caused the most destruction. They burned about 7,000 structures destroying a large portion of rural residential area and affecting the Napa and Sonoma watersheds which provide drinking water and valuable habitat for many species such as anadromous fish.

There is great concern for watersheds post-fire due to the pollutants that form and can enter surface water by a storm event. WSP Members, Sofia Morales-Leon and Elisabeth Beckensten, and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) staff worked with officials from federal, state, and non-profit organizations to address post-fire public health, storm water, flood, and erosion issues in the Napa and Sonoma watersheds.

Sofia Morales-Leon and Elisabeth Beckensten conducting sediment sampling.

Sofia Morales-Leon installing straw wattles.

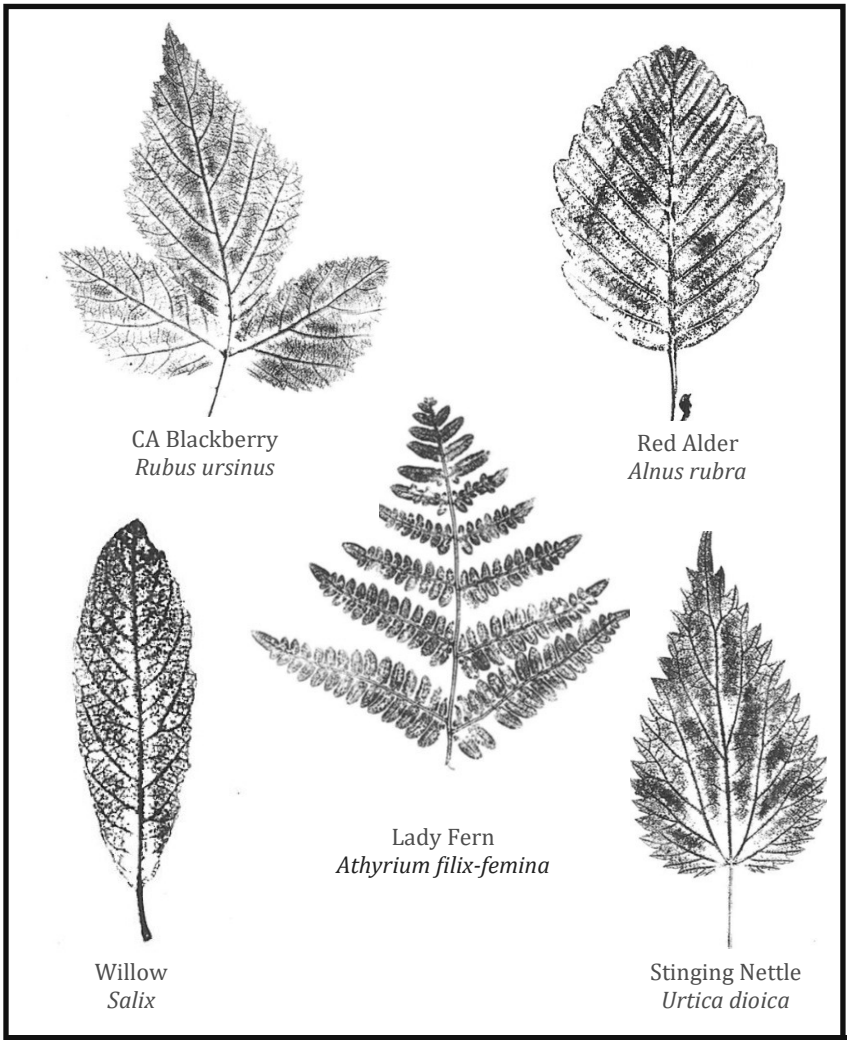
Sofia, Elisabeth, and the SFBRWQCB staff assessed burned sites and installed best management practices (BMPs). The BMPs used in this project were straw wattles and gravel bag berm which were placed in perimeters of burned structures and eroding slopes to protect water quality by preventing ash, debris, and sediment from entering the stream systems.

The team conducted surface water quality monitoring during rainstorms to assess if areas of the watershed were affected by pollutants carried from burned areas. Water samples were collected in four major storm events, from creeks greatly affected by the fire.

After all data was collected and organized, results indicated that water quality was not impacted by the fires. In comparison, water quality assessments from watersheds affected by past Southern Californian wildfires showed a huge spike of metals and other pollutants that cause a negative impact on human health and aquatic life. The Water quality monitoring efforts led by the SFBRWQCB team were instrumental in discovering that the Napa and Sonoma watersheds didn't get impacted as severely as other watersheds in California. With increasing risks of wildfire in California's future, water quality monitoring and restoration efforts such as those made by SFBRWQCB will be crucial for maintaining healthy watersheds.

About the Watershed Stewards Program

Since 1994, the Watershed Stewards Program (WSP) has been engaged in comprehensive, community-based, watershed restoration and education throughout coastal California. WSP was created in 1994 by California Department of Fish and Wildlife (CDFW) biologists, educators, and the California Conservation Corps to fill critical gaps in scientific data collection, in-stream restoration, and watershed education. In collaboration with landowners, tribal communities, teachers, community members, nonprofit organizations, and government agencies, WSP works to revitalize watersheds that contain endangered and threatened salmonid species (Chinook Salmon, Coho Salmon, and Steelhead Trout) by using state-of-the-art data collection and watershed restoration techniques. WSP also engages members in education, outreach, and volunteer recruitment efforts to increase the capacity of partner organizations. WSP currently has Members working from the Oregon border to the Santa Monica Mountains.



Plant prints made by Adelaide Robinson.

Adelaide Robinson holding a sculpin.

Plants of Olema Creek

By Adelaide Robinson
Member placed at Point Reyes National Seashore

Plants play a key role in the watershed by cleaning water, providing shade, and creating woody debris for salmonids. I made these prints with a few of my favorite plants I found in Olema Creek, which runs through Point Reyes National Seashore.

Drawing of a treatment wetland in Castroville by Rachel Stump.

How can Treatment Wetlands Protect Our Watersheds?

By Rachel Stump
Member placed at Central Coast Wetlands Group

Agricultural practices around the Monterey Bay Area introduce an excess of nutrients (such as nitrogen and phosphorus) and pesticides into sloughs located very close to the ocean, and this runoff is largely unregulated. Thanks to the team at Central Coast Wetlands Group, treatment wetlands have been constructed (including one exclusively built by the year 22 WSP Members!) to treat water flowing through the agricultural fields of the productive Moro Cojo, Elkhorn Slough, and Salinas Valley watersheds.

The goal is to promote the use of these wetlands to agricultural landowners that inadvertently contribute pollution to the Monterey Bay water system. A small amount of land donated to this cause can clean up many acres worth of storm and agricultural runoff. Eventually, this practice might catch on and inspire the construction of large-scale treatment wetlands in which landowners would pool resources and help preserve local marine and riverine communities.

Treatment wetlands tucked into agricultural fields provide more surface area and structure for all of the processes that help remove pollutants from water that would otherwise go untreated. Healthy, native macrophyte plant communities not only absorb a good amount of nitrogen and phosphorus on their own, but also support the kind of environment that pollutant fixing microbes love. These microbes attach to the structure of underwater plants and reside in the muddy sediment, where oxygen is low and there is lots of decayed organic material from which to source carbon. In a process called biogeochemical cycling, microbes draw in nitrogen, phosphorus, and sulfur to feed and reproduce.

Story continued on page 5>>>

Plants and People

By Rachel Clemons
Member placed at Grassroots Ecology

they say that plants are not like people, but i disagree

i've seen wildflowers bloom bravely in the springtime
and thrive in unlikely places
softening treacherous mountainsides and cracks in the sidewalk
celebrating the sun with orange and pink, and
laughing with purple and white

i've watched the willow on the streambank, its
strong roots securing the soil above, and its
waxy leaves shading the stonefly and the trout below
broken parts wander away with the rains and begin to
root in many places, a plant of my own heart

i've chatted with the milk thistle in the meadow
an ocean away from home
it still awakens each morning to do its work
loosening, healing compacted earth and making nectar for the bees

i've listened to the redwood giants, who
speak of a time when we lived with less interruption, who have
watched our foolishness for a millennia without judgement
they place a hand upon my shoulder and say
sometimes there is nothing left but to sit still and breathe

perhaps we can take note of the way our green companions
stay grounded and grow steadily toward light

the way they give freely to the moth, the deer, the earthworm
and mushroom, and patiently await their turn to receive again

a gentle reminder that
all things are borrowed, including time
and life itself

they say that plants are not like people, but i say
if we look closely enough
we can see the best parts of
ourselves in them

Rachel Clemons holding a newt
Photo credit: Devon Jackson

How can Treatment Wetlands Protect Our Watersheds? *continued from page 4.*

In the end, the water that flows back into the system contributes a smaller nutrient load to its final destination - the ocean. Furthermore, the plants growing in these treatment wetlands provide habitat and food for invertebrates, birds, and other wildlife in areas where they would otherwise be excluded by human activity! The negative impact on marine communities is diminished and may eventually allow for the reintroduction of species that have been lost to the area, including salmonids that need fresh, clean water to make their way back to their natal stream for spawning!

In a world of mass agricultural practices, it is important to find solutions to mitigate human impact on the water shared by all. Treatment wetlands are one giant step towards a cleaner future!

A Reflection on When Fish Die

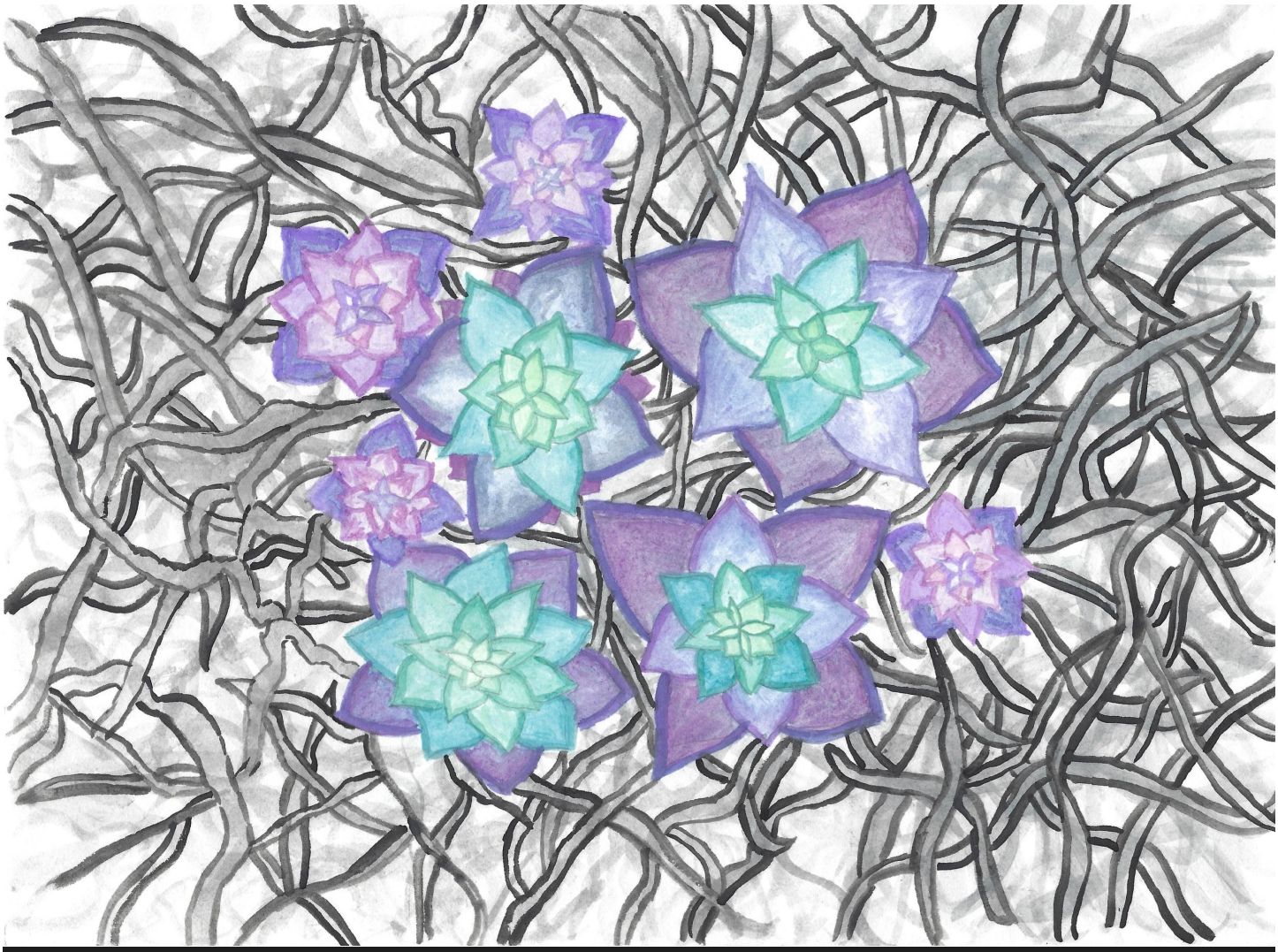
By Priscilla Sisommout
Member placed at Point Reyes National Seashore


Priscilla Sisommout holding a newt.

In order to gather answers we first must gather data, but sometimes data comes at a heavy cost. During spring juvenile surveys our crew sets up smolt traps – these traps are designed to capture young Coho Salmon, also known as smolts, so we can monitor the smolts before they migrate out to sea. The smolt trap consists of a fyke net, a long pipe, and a live box to hold the fish. Every day a fisheries technician checks the trap for fish. The fish are removed with a net, measured and weighed. If there is a coho in the trap we surgically add a Passive Integrated Transponder (PIT) into their abdomen area for further study of their migration patterns. With any study, be it surgical or not, there is stress on the species under study. In other words with smolt traps there is a lot of stress on the coho smolts. When there is high stress fish can die and the possibility that it might be your fault is a tough situation for a young aspiring conservationist. After serving with Point Reyes National Seashore for nearly ten months, I can say I understand that feeling.

There is something humbling and horrifying about holding an endangered species in your hands, especially when those same hands may contributed to the species' death. So how does one reconcile an internal conflict between the insecurity of being new and inexperienced with the drive to prove yourself and do the best you can? Part of me stands very firmly on the side that death is part of the process of learning how to work with the fish, yet another side of me bleeds for bringing the species closer to extinction. What I am sure of is that I'm still proud of the conservation effort I'm contributing too. At the end of the day I go home with both a sense of purpose and sometimes with a feeling that I could have done better. Therefore, my advice to myself moving forward is to give myself time to learn and make mistakes. There will be days were the mistakes weigh heavily, and there will be days were I feel so fulfilled. It is part of the growing process to experience both!


Priscilla Sisommout measuring a coho smolt.



Watercolor painting by Emily Cain.

Regrowth and Resilience

By Emily Cain

Member placed at Central Coast Wetlands Group (CCWG)

This watercolor painting depicts *Dudleya caespitosa,* a succulent native to the dunes of the Monterey Bay area, growing through dead *Carpobrotus edulis,* or ice plant. A portion of our work this year was dedicated to planting native dune plants in the once ice plant-covered dunes of Salinas River State Beach, where the Salinas River meets the Pacific Ocean. Dunes provide a buffer against extreme ocean conditions, protecting estuaries that provide crucial habitat for juvenile salmonids. Planting young, fragile, native plants like *Dudleya caespitosa* in mulch made from dead ice plant protects them from the often harsh dune environment, encouraging their growth and producing a unique beauty. From the mistakes of the past, where ice plant was once widely planted to stabilize the naturally shifting dunes, grows the resilience of the future; where plants like *Dudleya* will restore the dunes to their healthy, dynamic state.

Emily Cain in Arroyo de la Cruz Estuary.

My Year With WSP

By Gabby Guaiumi

Member placed at Marin Municipal Water District

My term with WSP has been exciting and fulfilling. When I arrived to my Placement Site, Marin Municipal Water District (MMWD), my site partner Justine and I began training for spawner season. This entailed us counting spawning salmon and their nests, also known redds, so that we could form population estimates for Coho Salmon and Steelhead Trout. Not only did we see coho, chinook, chum, and steelhead, we also got to see Pink Salmon and make friends with some otters! Learning how to distinguish between that many species of salmonids was challenging at first, but we got the hang of it with time and guidance from our Mentors.

After spawner season, we began smolt trapping season which was a blast! Justine and I practiced handling and identifying many species of native and non-native fish, and we were able to study adult steelhead as well as quite a few lamprey. In addition to doing fisheries monitoring, MMWD also has frog docent and turtle observer programs. I was in charge of the turtle observer program where I assisted with outreach and volunteer management. I recruited volunteers, facilitated the volunteer orientation, and assisted volunteers with data collection.

Clockwise from left: Gabby Guaiumi holding a chinook carcass while conducting spawner surveys; Gabby holding an invasive red-eared slider; Gabby holding an adult steelhead found in a screw trap; Gabby participating in fire training, Gabby and her site partner, Justine Brumm, excited to be holding their WAP; a lamprey that Gabby found in the MMWD smolt trap

One of the other activities we engaged in was our Watershed Awareness Project. MMWD recently completed a restoration project to increase winter habitat for salmonids. There was a lot of bare dirt around the project area so we planted the upslope and riparian area with native plants to prevent bank erosion and sedimentation. It was a huge success; we recruited over 70 volunteers and planted over 203 plants!

The only part of WSP I was intimidated by was teaching the WOW! curriculum, since I thought I was not a huge fan of kids; turns out, I actually really enjoy creating lessons and teaching kids! The first graders I taught were always energetic and enthusiastic, and I looked forward to teaching with them every week.

In summary, my term with WSP has been one of growth and learning, both professionally and personally. I was challenged to learn new skills and I formed meaningful relationships with my Mentors and the other WSP Members. WSP has helped me build my confidence and realize I can make my life anything I want it to be. I am no longer letting a fear of failure dictate my choices and I am pursuing the dream that scares me the most: firefighting!

Adelaide Robinson and Priscilla Sisommout conducting spawner surveys in Olema Creek.

District C at Orientation.
Photo credit: Jody Weseman

Dear Watershed Stewards Program,

By Livier Enciso

Member placed at NOAA Southwest Fisheries Science Center

Thank you for providing me with two terms of work I truly enjoyed. I have grown as a scientist, a field technician, and a woman. While serving with two WSP Placement Sites, Russian River Salmon and Steelhead Monitoring Program and NOAA Southwest Fisheries Science Center, I learned how to implement the scientific method in order to understand coho survival and behavior in a rapidly changing environment. I was able to develop "creek legs", which I never thought I would be able to. It took me flooding my waders and constantly hitting my knees during my first spawner season to get some idea of how to walk in creeks. I learned different methods of collecting data, some in which I felt confident and others not so much. It was good for me to realize what methods I had the most success in and which I needed to improve in. This helped me make the decision to serve a second term with WSP. I am glad I've had the opportunity to serve for a second year, because I was able to improve in the areas I fell short in before. During my first term I was excited and nervous to learn, but during my second term a lot of those nerves turned to confidence. I not only learned from my Mentors and coworkers, but WSP Members alike. I created friendships I believe will last a lifetime. As this term comes to an end, I find myself excited to finish and discover my next venture. I am grateful to you, because my next venture would not be possible had it not been for my two terms of WSP.

Thank you,
Livier Enciso

Livier Enciso collecting data.

Edible Plants in Scott Creek

By Angie Garelick
Member placed at NOAA SWFSC

Angie Garelick collecting GPS coordinates along Big Creek.

While conducting spawner surveys this spring, I learned about a couple of edible plants that grow along the banks of Scott Creek. There are salmonberries (*Rubus spectabilis)* and miner's lettuce or Indian lettuce (*Claytonia perfoliata).* The salmonberries become ripe in early May. I can see where they get their common name from, since they look like salmon eggs. There are yellowish-orange and red varieties of these berries. They are a little tart, but very tasty. Salmonberries are native to California and can be found all the way up to Alaska. Miner's lettuce is also native to California as well as Northern Mexico, British Columbia, and Guatemala. Miner's lettuce is very refreshing to eat. It is watery but has a crisp flavor to it. It is found in the shadier and moister parts of the creek. I first started to notice the growth of Miner's lettuce in early April and noticed the flowers bloomed in early May.

Facts about Salmonberries and Miner's Lettuce:

While the fruit of the salmonberries are delicious to eat on their own and high in Vitamin C and K, almost all of the plant can be eaten or used to benefit humans. The young shoots of the salmonberries can be eaten raw or cooked. When boiled, the roots can be used to treat stomach pain. The bark can be ground into a powder and used to treat skin burns. The leaves can be used to make tea.

Miner's lettuce is a great source of vitamin C. Miner's lettuce gets its name from the gold rush era. The miners ate the lettuce in order to prevent scurvy. I believe the miners had the right idea, this lettuce has way more flavor than any other type of lettuce I have eaten. Native Americans used this plant as well. They would boil it, or eat it raw. Be careful not to eat a large quantity of it because it can become toxic due to the fact that it can contain oxalates. Oxalates can be found in other foods such as spinach. The chances of you eating too much and causing a buildup of oxalate molecules in your body is not common. The biggest symptoms of oxalate overload are kidney stones and painful urination.

Story continued on page 11>>>

Salmonberries range from 1 to 4 meters in height. The serrated leaves normally have three leaflets, and the middle leaflet is bigger than the other two. The flowers are magenta in color with five petals. The leaves are a vibrant green.

The leaves of miner's lettuce are oval shaped and bright green, sometimes streaked with white. The plant has multiple tiny white/blue flowers in the center of the oval shaped leaves. Each flower has five rounded petals.

A Righteous Path

By Devon Jackson
Member placed at Grassroots Ecology

Devon Jackson
Photo Credit: Rachel Clemons

I wanted to write a song that drew parallels between the life cycle of anadromous fish, and our shared experience as a WSP cohort. We're both working hard to make a difference in a world that is changing very fast around us. The time and effort we put into our path bolsters up the communities that depend on us to survive. Without the hard work of those that have come before us, there would be too many obstacles to complete our journey. Ultimately, we hope that our decisions will lead us to a final resting place, a righteous path.

[*Verse 1*]
Oh man it's been one good ride, time for us to say goodbye
Twenty-four has come and past, hope we made a big impact
Grateful for those that help us grow, now it's time for on our own
Time to send us off oh jeeze, drift into that soft stream
[*Chorus*]
Swimming up the stream so hard, will they make it very far?
We moved a rock and we moved a river, all we need is hope just a sliver
And we will fight on
[*Verse 2*]
Growing pains oh will they last, gone in such a quick flash
Grinding hard to build a stream, dash of light and bodies lean
Strength in numbers, yes we know, even when it comes down snow
Growing big and jumping high, gone in to that big blue sky
[*Chorus*]
Swimming up the stream so hard, will we make it very far?
We moved a rock and we moved a river, all we need is hope just a sliver
And we will fight on
[*Verse 3*]
Now it's time to return home, sense spike, and body goes
Oh yes it's the final hour, we've got to use this power
Birds, bees, and tall trees mother-nature whispers please
[*Outro]*
Contemplate the aftermath; yes we followed the righteous path
Contemplate the aftermath; yes we followed the righteous path
Contemplate the aftermath; yes we followed the righteous path

Edible Plants in Scott Creek, continued from page 10

These plants are not only delicious to eat while doing spawner surveys, but play a role in the ecosystem in which we, as the Watershed Stewards Program, are trying to protect. The salmonberries provide shade and coverage for young salmon and steelhead. Bugs love to eat the berries and the leaves, which provides food for salmonids when the leaves drop into the water. Miner's lettuce provides bank stability helping to protect salmonid habitat. I have loved learning about these native, edible plants during my year of service with NOAA-Southwest Fisheries Science Center in Santa Cruz, CA.

References:

"Miner's Lettuce." San Elijo Lagoon Conservancy | Plant Guide, 2018, www.sanelijo.org/plant-guide/miners-lettuce.
"Salmonberry (Rubus Spectabilis)." Only Foods, Deepamala Bhattacharya, 13 Feb. 2012, www.onlyfoods.net/salmonberry-rubus-spectabilis.html.
Photos accredited to Angie Garelick

Devon Jackson and Rachel Clemons at San Luis Obispo Earth Day Outreach Event

Alumni Spotlight Article

Featuring Henry Bonifas

Team Leader in Year 19 (2012-2013)

Henry Bonifas at San Francisco Earth Day

What was your WSP member experience like?

My experience as a Team Leader was a positive one that gave me valuable experience in supervising and administrative tasks. While it's almost always fun to be in the field working under the sun, Jody showed me the immense amount of necessary work that goes into supporting a program like WSP.

Was there one experience that was especially memorable? Why?

My favorite experiences were when I was able to visit my Members at their sites, between Santa Cruz and Point Reyes. It was great to finally see and work with them in the field instead of hounding them for some administrative task. It was neat to see how different each site was, and how the Members were taking advantage of and contributing to the goals of their mentoring organization.

What are your title and responsibilities in your current job? What is involved in a typical day?

I am a Grounds Restoration Specialist with the SLO County Public Works Department, responsible for budgeting, installing and monitoring/reporting mitigatory restoration sites. We are responsible for around 30 sites at any given time, varying in magnitude from a stand of native grasses to a 4,000 oak tree woodland planting. The typical work day changes seasonally. This time of year we are keeping an eye on restoration sites we planted last fall/winter and planning for next year's projects. I'm also monitoring our greenhouse to ensure that our collected native seedstock is germinating appropriately and will be ready when we need to plant it out.

What's your favorite part of your job now?

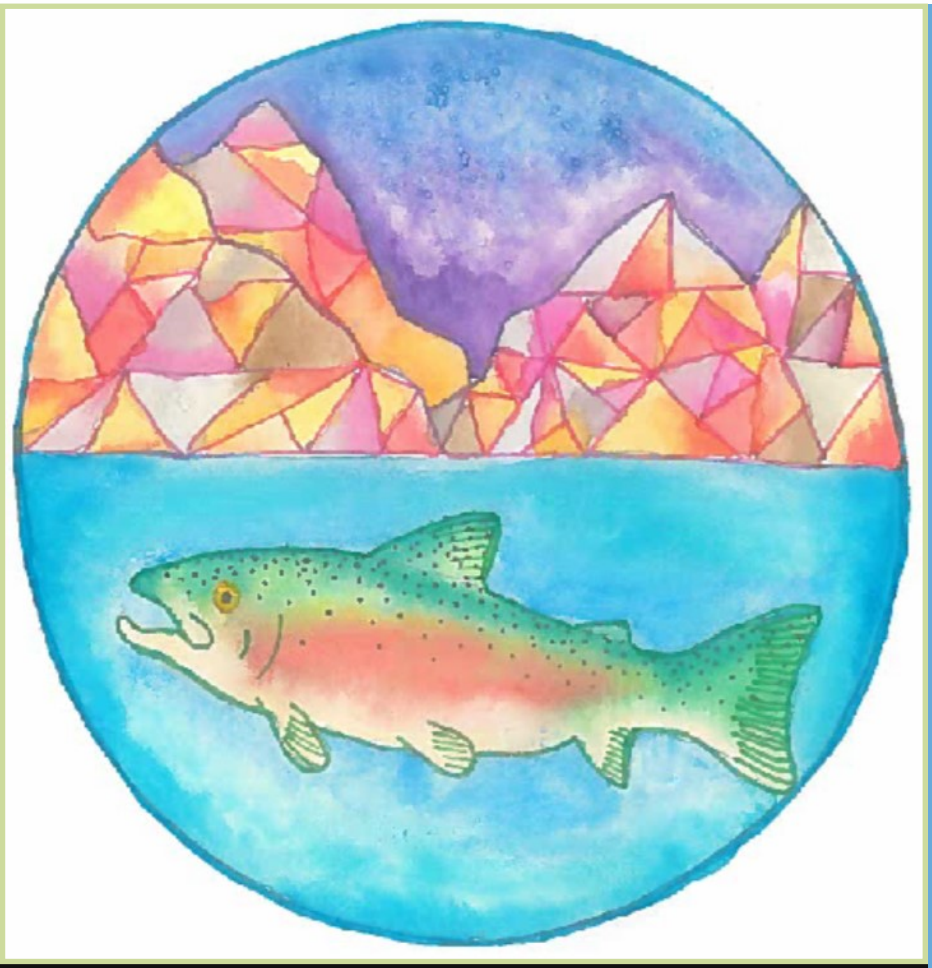
My job takes me throughout San Luis Obispo County, with projects from the coastal bluffs to hot and arid inland sites. I've visited places in the county that I had never been to before and grown to appreciate areas that I would previously pass up without notice. I get to go out and collect native seed, experimenting with propagation strategies, often failing, but learning a lot as I go. Also, I get to work with Sarah and Sal (WSP Members placed at San Luis Obispo Resource Conservation District) once a week, and they are real hard workers.

How did WSP help prepare you for the work you are currently doing?

As a Team Leader, I communicated with Members and sponsors across a wide array of agencies and non-profits. I was exposed to the large network of people working in conjunction on the same overall goal of watershed protection. I developed effective ways of communicating from the administrative side after spending much of my previous time in the field.

What advice would you give current WSP Members?

I would encourage members to take care in maintaining the personal and professional connections they're making right now. It is a relatively small field we're involved in and they will be working with and seeing these people around for years to come.



Watercolor painting of a steelhead by Tessa Wolf.

Tessa Wolf conducting redd surveys

Fish Haiku

By Tessa Wolf
Team Leader placed at WSP San Luis Obispo

Hatching, then spawning
As soon as it is over
The cycle begins

An arid landscape
Seems uninhabitable
The steelhead fight on

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ccc.ca.gov/watershed-stewards-program/

Our Mission

The Watershed Stewards Program's (WSP) mission is to conserve, restore, and enhance anadromous watersheds for future generations by linking education with high quality scientific practices.

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Become a WSP Member! Learn more about the program and find our application at:
ccc.ca.gov/watershed-stewards-program/